



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/421,043	10/20/1999	TOSHIO MASUDA	503.34403VP2	3576

20457 7590 11/29/2004

ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-9889

EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT PAPER NUMBER

1763

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/421,043

Applicant(s)

MASUDA ET AL.

Examiner

Luz L. Alejandro

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 70-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 70-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/6/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/7/04 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 70-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al., JP 4-214873 in view of Shinji, JP 9-275092 and Ishioka, JP3-104222.

Tsuji et al. shows the invention substantially as claimed including a plasma apparatus for processing a sample 10 disposed inside a vacuum vessel, the apparatus comprising: a chamber located inside said vacuum vessel, an interior of the chamber being in a vacuum state and the sample being disposed in the chamber, electromagnetic waves being supplied from an upper side of the chamber and processing gas being introduced into the chamber so as to generate a plasma in the chamber; an electrode 11 disposed at a lower part of the chamber and having the sample loaded therein so as to be processed by the plasma generated inside of the chamber; an aluminum member 20 held against the sidewall inside of the chamber and forming an inner surface of the chamber which is contact with the plasma generated in the chamber (see fig. 1); and a thermally conductive medium 21B being circulated inside of the member so as to control the temperature of the member within a predetermined range, wherein the thermally conductive medium is a coolant (see, for example, paragraphs 0032 and fig. 1).

Tsuji et al. does not expressly disclose that the member 20 is detachable and removable to the outside of the chamber. Shinji discloses a cylindrical plasma apparatus comprising a member 12 that is detachably attached to the chamber in order to be easily removable, therefore, reducing the cleaning time of the apparatus (see paragraph 0005). Also, Ishioka discloses a plasma apparatus comprising a removable shield 17 for enabling removing of the shield during maintenance and management of

the system (see page 7-first paragraph, and fig. 2). Therefore, in view of these disclosures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Tsuji et al. as to comprise a detachable member because in such a way maintenance and management of the apparatus is more easily performed, and the cleaning time of the apparatus is reduce.

With respect to: a) the apparatus being a plasma etching apparatus, b) cooling the surface of the member during etching processing of the sample so that products generated in the chamber during the etching processing of the sample are deposited on the member, c) wherein a temperature of the surface of the member is controlled within the claimed temperature range, and d) wherein a temperature of the surface of the member is controlled to be lower than a temperature of the sample during the etching processing of the sample, such limitations are directed to method limitations instead of apparatus limitations, and since an apparatus is being claimed as the instant invention, the method teachings are not considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses that do not further limit, and therefore do not patentably distinguish the claimed invention. The apparatus of Tsuji et al. modified by Shinji and Ishioka is capable of being used for an etching process, cooling the surface of the member during etching processing of the sample so that products generated in the chamber during the etching processing of the sample are deposited on the member, controlling the temperature of the surface of the member within the claimed temperature range, and

controlling the temperature of the surface of the member to be lower than the sample as claimed.

Claims 74-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al., JP 4-214873 in view of Shinji, JP 9-275092 and Ishioka, JP3-104222 as applied to claims 70-73 above, and further in view of Otsubo et al., U.S. Patent 4,985,109.

Tsuji et al., Shinji, and Ishioka are applied as above but fail to expressly disclose an antenna disposed at an upper part of the chamber for supplying the electro-magnetic waves to generate the plasma inside of the chamber. Otsubo et al. discloses an apparatus in which an antenna 5 is disposed at an upper part of the chamber for supplying the electro-magnetic waves to generate a uniform plasma inside of the chamber and for uniformly processing the whole surface of the substrate (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Tsuji et al. modified by Shinji and Ishioka as to comprise the claimed antenna in order to generate uniform plasma and to uniformly process the whole surface of the substrate.

### ***Response to Arguments***

Applicant's arguments filed 10/7/04 with respect to claims 70-77 have been fully considered but they are not persuasive.

Applicant argues that there would be no reason to remove the shield in Tsuji as suggested by Ishioka, for example, because in Tsuji the shield is cleaned within the chamber. However, the examiner respectfully contends that even though the shield of Tsuji may last longer, since it is cleaned within the chamber, the shield will have to be replaced at some point in time and therefore, the combination of reference as applied above is proper and respectfully maintained.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that Shinji and Tsuji and Ishioka are not combinable, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it

that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

With respect to: a) the apparatus being a plasma etching apparatus, b) cooling the surface of the member during etching processing of the sample so that products generated in the chamber during the etching processing of the sample are deposited on the member, and c) controlling the temperature of the surface of the member as claimed, as stated in the above rejection, such limitations are directed to method limitations instead of apparatus limitations, and since an apparatus is being claimed as the instant invention, the method teachings are not considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses that do not further limit, and therefore do not patentably distinguish the claimed invention. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The apparatus of Tsuji et al. modified by Shinji and Ishioka is capable of being used for an etching process, cooling the surface of the member during etching processing of the sample so that products generated in the chamber during the etching



processing of the sample are deposited on the member, and controlling the temperature of the surface of the member as claimed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

November 24, 2004